



Acquisition Research Program:  
Creating Synergy for Informed Change

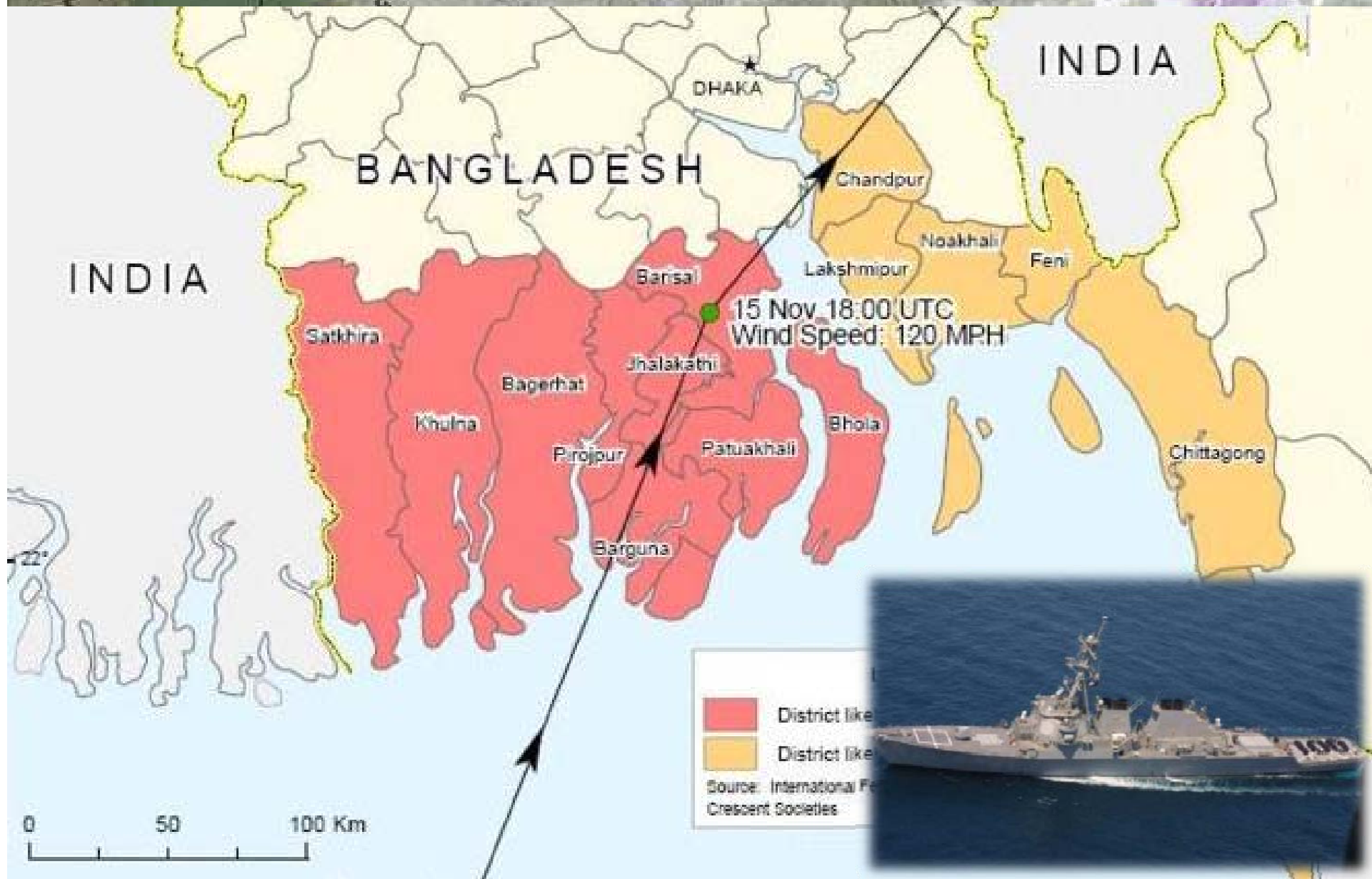
# **An Analysis of U.S. Navy Humanitarian Assistance and Disaster Relief Operations**

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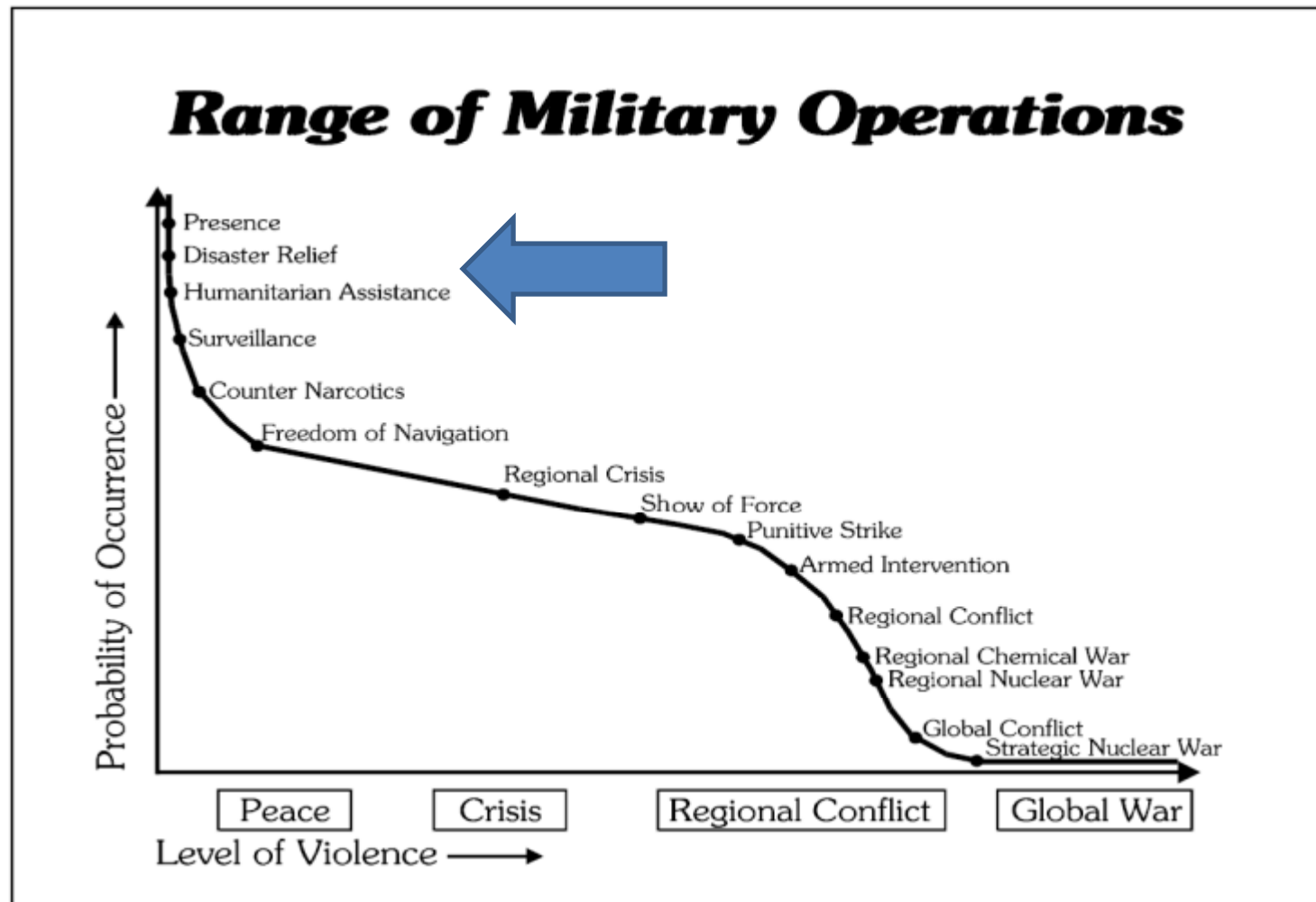
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Naval Postgraduate School

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# Cyclone Sidr. Nov 15, 2007



# Probability of Mission



Source: Nix, D., (2011, January) *The Spectrum of Operations* (Unpublished PowerPoint Presentation). Joint Military Operations course, Naval War College.



# Questions of Interest

- How does the US Navy conduct HADR operations?
  - Response timelines?
  - Ship selections?
  - Missions?
- How *should* the US Navy conduct HADR operations?
  - Future research...





# A Scenario Approach

Our research focused on:

- 1) Three disasters
- 2) USN and MSC ships provided for relief efforts
- 3) Missions Capabilities provided to relief efforts

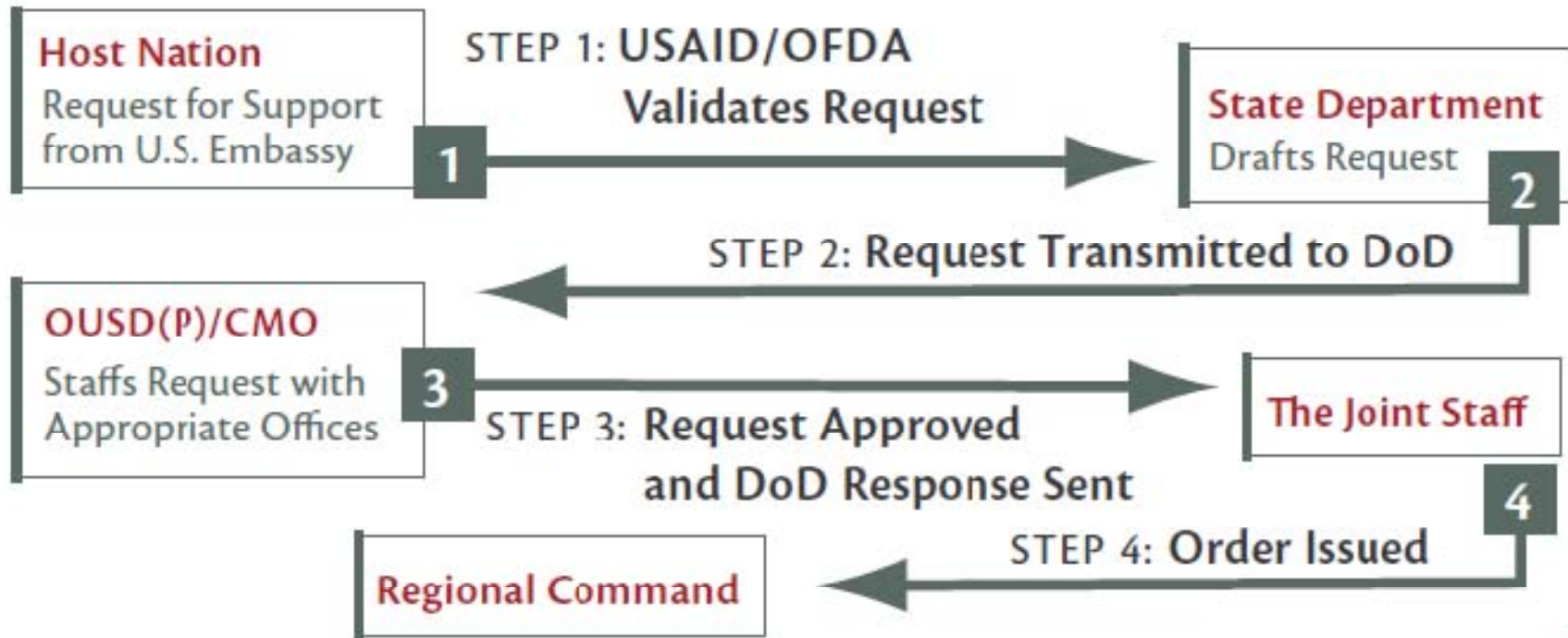


# Common Disaster Traits

- Deaths and injuries
- Population dispersion, homelessness, missing persons
- Facility destruction, loss of common goods
- Demand for freshwater, food, and medical supplies
- Demand for medical personnel, facilities, and volunteers
- Destruction of transportation infrastructure
- Large amounts of debris and destroyed buildings
- Uncertainty in coast line with regard to navigation



# Mission Requests



- **Critical:** Missions with major impact on relief efforts
- **Non-Critical:** Missions generally of less importance





# Critical Missions

## Action Missions

- Aircraft Support
- Landing Craft Support
- Search and Rescue
- Personnel Transfer Support
- Fresh Water Production
- Personnel Support
- Berthing Capability
- Medical Support

## Cargo Missions

- Dry Goods
- Refrigerated Goods
- Fresh Water
- Roll On – Roll Off
- Fuel
- Self Sufficient Handling Capability



# Parameters

- Difficult to determine quantitative scale of capabilities
- Solution: Categorize ships into one of three levels of capability
  - Cutoff points chosen based on 1/3 splits or significant changes in mission capability



The vessel has little no capability to conduct the specified mission



The vessel has some capability to conduct the specified mission



The vessel is very capable in conducting the specified mission



# USN

- Traditional Mission
  - Combat Operations
- What do they contribute to HADR operations?



Missions to Platforms			Mission / Ship Characteristic																
			Aircraft support	Landing Craft support	Search and Rescue	Cargo Capacity					Personnel transfer	Freshwater Production	Personnel support	Berthing capability	Medical support	Transit speed	Hydrographic survey	Salvage Ops	Towing
						Dry goods	Refrigerated goods	Fresh water	Roll On Roll Off	Fuel									
U.S. Navy	Amphibious Ships	CVN (Nimitz)	Green	Red	Green	Yellow	Yellow	Yellow	Red	Yellow	Yellow	Green	Yellow	Green	Green	Green	Red	Red	Red
		CVN (Enterprise)	Green	Red	Green	Yellow	Yellow	Yellow	Red	Yellow	Yellow	Green	Green	Green	Green	Green	Red	Red	Red
		LHD	Green	Green	Green	Yellow	Yellow	Yellow	Red	Yellow	Green	Yellow	Green	Green	Green	Yellow	Red	Red	Red
		LHA	Green	Green	Green	Yellow	Yellow	Yellow	Red	Yellow	Green	Yellow	Green	Green	Green	Yellow	Red	Red	Red
		LCC	Yellow	Red	Yellow	Yellow	Red	Red	Red	Red	Yellow	Red	Yellow	Yellow	Yellow	Yellow	Red	Red	Red
		LPD (San Antonio)	Green	Green	Green	Yellow	Red	Red	Red	Red	Yellow	Red	Yellow	Yellow	Yellow	Yellow	Red	Red	Red
		LPD (Austin)	Green	Green	Green	Yellow	Red	Red	Red	Red	Yellow	Red	Yellow	Yellow	Yellow	Yellow	Red	Red	Red
		LSD (Harpers Ferry)	Green	Green	Green	Yellow	Red	Red	Red	Red	Yellow	Red	Yellow	Yellow	Yellow	Yellow	Red	Red	Red
		LSD (Whidby Island)	Green	Green	Green	Yellow	Red	Red	Red	Red	Yellow	Red	Yellow	Yellow	Yellow	Yellow	Red	Red	Red
	CRUDES	CG	Yellow	Red	Yellow	Red	Red	Red	Red	Red	Yellow	Red	Yellow	Red	Red	Green	Red	Red	Yellow
		DDG (FLT I & II)	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Yellow	Red	Red	Green	Red	Red	Yellow
		DDG (FLT IIA)	Yellow	Red	Yellow	Red	Red	Red	Red	Red	Red	Yellow	Red	Red	Red	Green	Red	Red	Yellow
		Frigates	Yellow	Red	Yellow	Red	Red	Red	Red	Red	Red	Yellow	Red	Yellow	Red	Green	Red	Red	Yellow
	Other	LCS (Freedom)	Yellow	Red	Yellow	Red	Red	Red	Red	Red	Red	Yellow	Red	Red	Red	Green	Red	Red	Yellow
		LCS (Independence)	Yellow	Red	Yellow	Red	Red	Red	Red	Red	Red	Yellow	Red	Red	Red	Green	Red	Red	Yellow
		PC	Yellow	Red	Yellow	Red	Red	Red	Red	Red	Red	Yellow	Red	Red	Red	Green	Red	Red	Yellow
		MCM	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Green





# MSC

- Traditional Mission
  - Combat Support
  - Multi-mission (research, etc)



- Ships more capable of meeting many HADR mission requirements
  - Combat support and HADR operations are actually very similar



Military Sealift Command (MSC)																				Missions to Platforms	Mission / Ship Characteristic																																																																																																																																																																																																																																																																																																																																																																																																																																																
Ready Reserve Force				PM - 5		PM - 3					PM - 2				PM - 1																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Avaiton Logistics Support				Break-Bulk Ships		OPDT		Lighterage-aboard ships		Crane Ships		RO/RO ships		Fast Sealift Ship		Dry Cargo		Common Use Tanker		LMSR		HSV		Break-Bulk		OPDS		T-AVB		T-AK (USA)		T-AK (USAF)		T-AOT		MPF Container		MPS		LMSR		T-ARC		T-AGIM		T-AGS (Nav)		T-AGS (Survey)		T-AGOS		AS		LCC		T-AH		T-AIF		T-ARS		T-AKE		T-AE		T-AO		T-AOE																																																																																																																																																																																																																																																																																																																																																																																																	

# Aircraft & Landing Craft

Capability / Aircraft		Lift	Personnel Transport	Range	Vertical Replenishment	SAR	Speed
Seaborne Aircraft	SH-60B	●	●	●	●	●	●
	SH-60F	●	●	●	●	●	●
	MH-60R	●	●	●	●	●	●
	MH-60S	●	●	●	●	●	●
	HH-60H	●	●	●	●	●	●
	CH-46E	●	●	●	●	●	●
	CH-53E	●	●	●	●	●	●
	CH-53K	●	●	●	●	●	●
	MH-53E	●	●	●	●	●	●
	AH-1W / AH-1Z	●	●	●	●	●	●
	HH-1N / UH-1N / UH-1Y	●	●	●	●	●	●
	MV-22 / CV-22	●	●	●	●	●	●

-Numbers supported not analyzed in our research

-Capabilities DID influence analysis of ships

										Mission / Ship Characteristic																				
										Aircraft support	Landing Craft support	Search and Rescue	Cargo Capacity						Personnel transfer	Freshwater Production	Personnel support	Berthing capability	Medical support	Transit speed	Hydrographic survey	Salvage Ops	Towing			
													Dry goods	Refrigerated goods	Fresh water	Roll On Roll Off	Fuel	Self Sufficient												
Landing Craft	LCAC																													
	LCU																													
	LCM (8)																													
	LCM (6)																													



# Response Summary

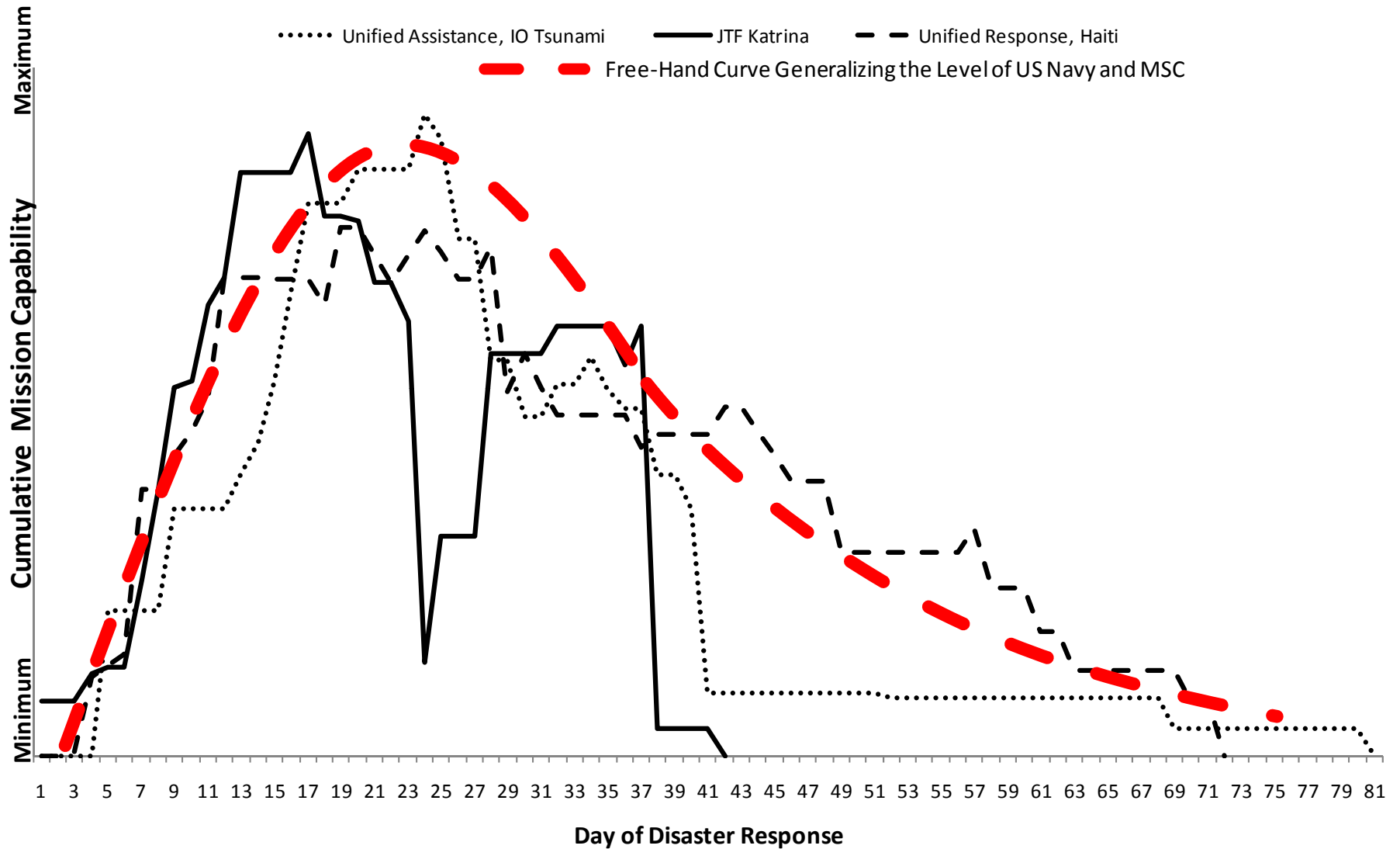
Response Summary Table			
Category	Unified Assistance	JTF Katrina	Unified Response
CG/DDG/FFG	6	0	4
LPD/LSD	3	3	5
LHA/LHD	2	2	3
CV/CVN	1	2	1
T-AH	1	1	1
MSC/Misc (w/o T-AH)	14	17	17
SSN	2	0	0
MCM/MHC	0	9	0
TOTAL SHIPS	29	34	31



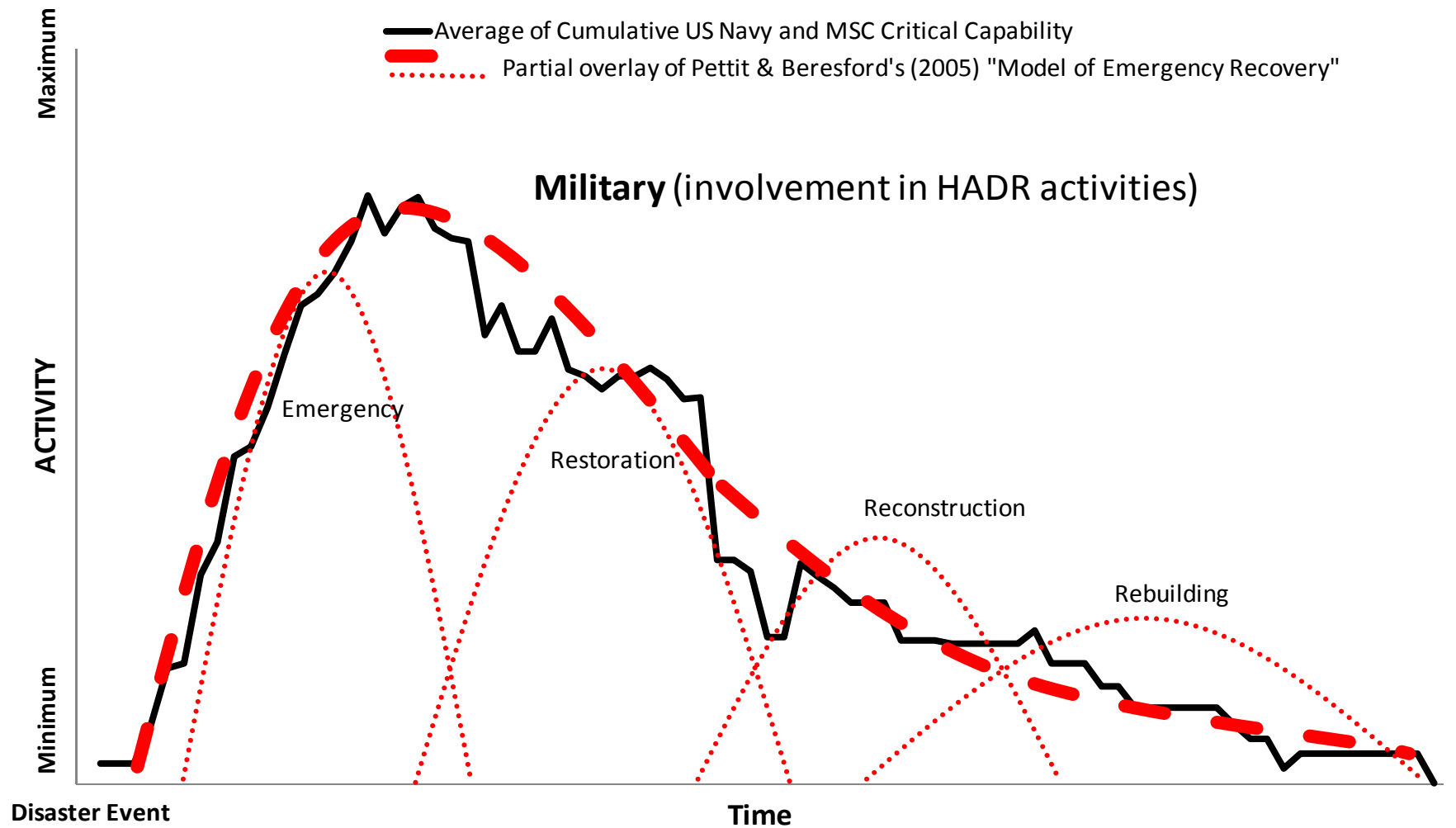




## Navy and MSC Cumulative Critical Capability



## Average of Cumulative US Navy and MSC Critical Capability provided for Unified Assistance, JTF Katrina and Unified Response



# Conclusions

- Consistent Response Patterns
- Ship Capabilities
- A ship designed for HADR
- Special considerations
- Task Force and Force Structure





# HADR Task Force



# Future Research

- Quantitative method of comparing ships capabilities
- Analysis of what missions different ships actually support
- Optimization model to determine ideal composition of a task force

